MARUSON®

UPS SYSTEMS

Power Solutions for All Your Needs

TOW-1500LCD

USER'S MANUAL

The uninterruptible power system (UPS) protects your sensitive electronic equipment from power problems such as power failures, power sags, power surges, brownouts, and line noise.

Features:

- Processor-controlled voltage regulation
- Eight outlets
  - Four with surge and backup protection
  - Four with surge protection only
- Telephone line surge protection jacks
- Cold start capability
- USB communication port

SAFETY INSTRUCTIONS

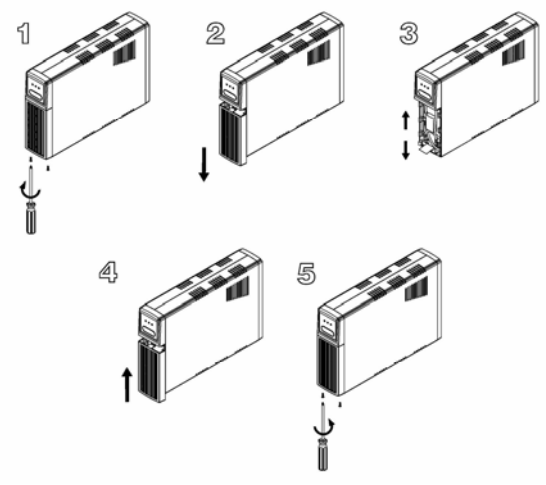
Once you have received the UPS product, you should remove and inspect the product for shipping damage. If any damage is found, please notify the carrier and your dealer. Please keep the shipping carton and the packing foam in the event the product must be returned to the factory for service.

A qualified technician must perform maintenance, other than battery replacement. Failure to do so could result in an electrical shock. Although the unit may be unplugged from utility power, hazardous voltage still may be present through the battery.

1. Place the UPS indoors in an area that has adequate airflow and is free from excessive dust. Do NOT allow the UPS to be exposed to moisture, rain, excessive heat or direct sunlight.
2. Use of the UPS product in life support applications where failure of this equipment can reasonably be expected to cause failure of life support equipment or to significantly affect its safety or effectiveness is NOT recommended.
3. Always disconnect the input power cord from the wall outlet before replacing the battery.
4. When replacing the battery, use the same number and type of battery.
5. Do **NOT** dispose of the battery in a fire: the battery may explode.
6. Do **NOT** open or mutilate the battery. Batteries contain an electrolyte that is toxic and harmful to both the skin and eyes.
7. Proper disposal of the battery is required. Please refer to your local laws/regulations regarding battery disposal.
8. Use tools with insulated handles to replace the battery to avoid personal injury. Due to energy hazards, please remove wristwatches and jewelry such as rings when replacing battery.

BATTERY CONNECTION REQUIRED BEFORE USE!

Connecting the Battery!



How to hook up the battery before installing the UPS?

1. Remove the screws from the bottom of the front panel.
2. Grasp the panel cover downward off the UPS.
3. Connect the battery positive wire (red).
4. Put the front panel cover upward.
5. Bolt the screws.

INSTALLATION AND OPERATION:

The following steps explain how to connect and operate the UPS.

1. Connect the UPS to a grounded power outlet.

NOTE: It is recommended that the battery be charged for at least 8 hours to ensure full charge before placing the UPS in service.

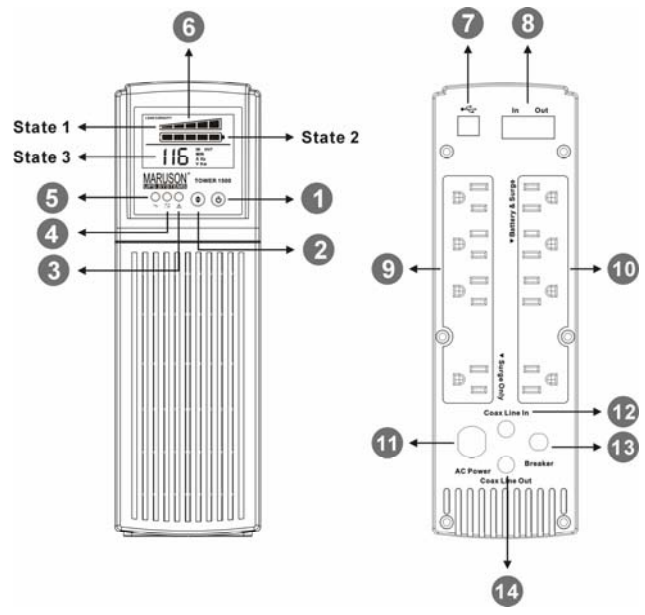
2. Plug your computer, monitor or load to be protected into the "Battery Backup & Surge Protection" outlets. (These outlets will provide emergency battery backup power during power problems as well as protection from surges and spikes.)

CAUTION: Do NOT plug **LASER PRINTERS** into the "Battery Backup" outlets.

CAUTION: Do NOT plug **ACCESSORY SURGE** strips into the "Battery Backup outlets.

3. Plug your peripheral equipment or non-critical loads (printer, scanner, fax, speaker, etc.) into the "Surge Protection" outlets. (These outlets provide surge and spike protection only they will **NOT** provide battery backup power during a utility power failure).
4. Switch on the UPS while the connected equipment is off.
5. Turn on your connected equipment when the "AC mode" LED light is illuminated.

INDICATORS



1. On/Off Push Button

This On/Off switch controls power to your equipment and performs a self-test to detect inverter, line, battery status & LEDs.

NOTE: Turn on the UPS.

Press and hold the switch for more than one second and release the switch after the beep. The UPS will start and provide the stable power to your equipments.

NOTE: Turn off the UPS.

Press and hold the switch for more than one second and release the switch. The UPS will shut down completely.

NOTE: Perform Self-test.

The UPS will perform self-test for about 5 seconds when the UPS is turned on.

2. LCD Choose Button

Click the switch each time it will display the UPS's special status and data's on the screen.

3. Fault / Warning (Red) LED

Indicates that a fault condition has occurred.

- Flashing Red LED indicates an overload condition or that the battery should be replaced.
- Solid On LED indicates that the output is shorted or an internal UPS fault exits.

See the Indicator Table below for further detail.

4. Backup mode (Yellow) LED

Indicates that the UPS is operating on battery and providing regulated AC power to the backup only outlets and the connected equipment.

5. AC mode (Green) LED

Indicates that AC utility power is present and regulated power (AVR) is applied to the connected equipment.

6. LCD Display

State 1: UPS load capacity display.

Load pixel is 20%--40%--60%--80%--100%

State 2: UPS battery capacity display.

Battery pixel is 20%--40%--60%--80%--100%

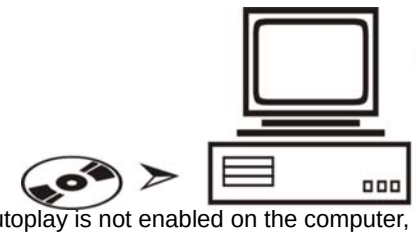
State 3: UPS input/output voltage & frequency display.

Click the **LCD choose switch**, it will cycle display input voltage, input frequency, output voltage and output frequency on the screen.

7. USB Communication Port

The built-in USB port connects to your computer. The PowerGuard Smart monitoring and shutdown software provided can automatically save your files and shut down your computer in the event of a prolonged power outage. The software also provides information regarding the status of your utility power line

Installing software



Follow the on-screen instructions.

If autoplay is not enabled on the computer, please follow instructions below:

- Double-click on My Computer on the desktop.
- Double-click on the CD-ROM drive icon and follow the on-screen instructions.

8. Data /Phone/Fax Protection Connectors

9. “Surge Only” Outlets

Four Nema 5-15R output receptacles that will provide surge and spike protection only

10. “Battery & Surge” Outlets

Four Nema 5-15R output receptacles that will provide both battery backup and surge protection.

11. AC Input Power Cord

Plug the AC power cord into your power source

12. Coax in :

TV/TNT/Satellite reception protection

13. Circuit Breaker (re-settable)

The button will protrude when the overload condition occurs. If the button protrudes, disconnect some non-essential equipment and reset the circuit breaker by pushing the button inward.

14. Coax out:

TV/TNT/Satellite reception protection

INDICATOR TABLE

Status Indicators

The UPS provides both visual and audible status indicators. Visual indicators consist of three LEDs to represent the following conditions:

- On utility power operation
- On battery power operation
- UPS fault/alarm

LED and Alarm Indicator Table

UPS Status		Green LED	Red LED	Yellow LED	Alarm
Self-test		Blink 1			B1
AC mode (on utility)	Normal	On	X	X	X
	Self Low battery	On	Blink2	X	B5
	overload	On	Blink2	X	B2
DC mode (on battery)	Normal	X	X	On	B1
	Low battery	X	X	Blink2	B3
	Overload	X	Blink2	On	B2
Short/Fault mode		X	On	X	On
Over-Bat/Bat Fault		X	Blink2	X	B4

* Blink 1 : ON 0.5 seconds / OFF 1 seconds

* Blink 2 : ON 0.25 seconds / OFF 0.25 seconds

* B1: 1 beep / 5 seconds: ON 0.25 seconds / OFF 4.75 seconds

* B2: 1 beep / 0.5 seconds :ON 0.25 seconds / OFF 0.25 seconds

* B3 : 2 beeps / 5 seconds: ON 0.25 seconds / OFF 0.25 seconds 2 times, 4 seconds OFF

* B4 : 3 beeps / 5 seconds: ON 0.25 seconds / OFF 0.25 seconds 3 times, 3.5 seconds OFF

* B5: 3beeps / 30seconds :ON 0.25 seconds / OFF 0.25 seconds 3 times, 28.5seconds OFF

Recycling Information:

Your UPS contains Non-Spill Sealed Lead Batteries. On the battery you will find the battery name. Please reference the chart below for recycling information. Other brand(s) of battery please contact Maruson Technology Corp. If outside the USA or Canada, please contact your local authorized distributor.

Battery Name	Recycling inside the USA
Vision Battery	1-877-730-2877
First Power Battery	1-877-730-2877
BB Battery	1-800-278-8599

SPECIFICATIONS

Model Numbers	TOW-1500LCD
Capacity	1500 VA / 900W
Nominal Input Voltage	120 Vac
Nominal Output Voltage	120 Vac
Automatic Voltage Regulation (AVR)	108-130Vac(±3%)
Frequency	50 / 60 Hz auto sensing
Outlets	8 Outlets (4 Battery Backup & Surge Protection; 4 Surge Protection only)
Lighting / Surge Protection	320 Joules
Transfer time to Battery/AC	2-6ms typical
Battery Type	Maintenance free lead-acid battery
Battery Specification	(2)* 12V 9 Ah
Typical Backup Time	Up to 55 Minutes
LAN / Phone / Fax Protection	RJ11/45
Short Circuit Protection	Circuit Breaker
Communication Port	USB
Operation Temperature	0°C–40°C
Operation Relative Humidity	0 to 95% non-condensing
Storage Temperature	-15°C–50°C
Net Weight	29.3 lb
Dimensions (HxWxD)	10.8 x 3.4 x 16.1 IN

Specifications may change without prior notice.

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TROUBLESHOOTING

Symptom	Possible Cause	Action to Take
UPS will not turn on	The UPS is not connected to the power source.	Ensure the UPS is securely connected to an AC outlet.
	Circuit Breaker has tripped.	Reduce the amount of equipment plugged into the “Battery Backup & Surge Protection” outlets of the UPS. Reset the circuit breaker by pushing it back in. Switch the UPS back on.
UPS is making a continuous sound and the “Overload” indicator is on	The “Battery Backup & Surge Protection” outlets are overload.	Turn off the UPS and reduce the amount of equipment connected to these outlets.
UPS does not provide expected runtime	The UPS battery is discharged due to a power outage and has not recharged.	Charge the battery for 8 hours. The UPS runtime is reduced until the battery is fully charged.
	Back-UPS is heavily loaded.	Unplug non-essential equipment (printers, scanners, etc) from the Battery Backup outlets and plug into 'Surge Only' outlets
UPS does not power essential equipment during an outage	The UPS circuit breaker “ tripped” .	Disconnect non-essential equipment from the UPS. Reset (push in) the circuit breaker and switch the UPS on. Plug equipment in one-at-a-time. If the circuit breaker trips again, disconnect the device that caused the breaker to trip.
	The battery has reached the end of its life.	Replace the battery or the battery module.
	Equipment plugged into a Surge Only outlet.	Unplug device from 'Surge Only' outlet and move to a 'Battery Backup outlet.
Flashing Indicators	Internal UPS fault.	Contact Technical Support (see Service and Support below).

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